2017

Online Teacher Professional Development for Gifted Education: Examining the Impact of a New Pedagogical Model

Matthew J. Edinger
University of Richmond, medinger@richmond.edu

Recommended Citation

Edinger, Matthew J. "Online Teacher Professional Development for Gifted Education: Examining the Impact of a New Pedagogical Model." *Gifted Child Quarterly* 61, no. 4 (October 2017): 300–312. https://doi.org/10.1177/0016986217722616.

Online Teacher Professional Development for Gifted Education:

Examining the Impact of a New Pedagogical Model

Matthew J. Edinger

The University of Richmond

Author Note

Matthew J. Edinger, School of Professional and Continuing Studies, University of Richmond.

Correspondence concerning this article should be addressed to Matthew J. Edinger, School of Professional and Continuing Studies, 28 Westhampton Way, University of Richmond, VA 23173. Email: medinger@richmond.edu

Edinger, M. J. (2017). Online teacher professional development: Building and testing a new online model for gifted education teachers. *Gifted Child Quarterly, 61*(4), 300-312. https://doi.org/10.1177/0016986217722616.

Abstract

This paper theoretically develops and examines the outcomes of a pilot study that evaluates the PACKaGE Model of online Teacher Professional Development (the Model). The Model was created to facilitate positive pedagogical change within gifted education teachers' practice, attitude, collaboration, content knowledge, and goal effectiveness. Kirkpatrick and Kirkpatrick's (2006) model of training evaluation suggests that trainees should evaluate the training for satisfaction at the time the training is completed, as well as six months after, to evaluate for behavior change. Applying Kirkpatrick and Kirkpatrick's (2006) model, findings indicate that teachers were immediately satisfied with the Model's effectiveness, adequacy and overall quality. Six months after the online teacher professional development, teachers indicated a strong positive change in each of the five gifted education pedagogical components. Overall, these preliminary findings suggest that the use of the Model creates a positive change within teachers' gifted education pedagogy.

Keywords: online teacher professional development, model, gifted education

Online Teacher Professional Development for Gifted Education: Examining the Impact of a New Pedagogical Model

In the current world of digital literacy, the online environment offers an additional delivery system for elementary and secondary teacher professional development (TPD). Teachers of students identified as gifted and talented have taken advantage of the growth of online TPD (oTPD) for gifted education by attending TPD offered by both local and distant organizations. This increase is appropriate since the importance of PD for gifted education teachers was highlighted in three standards delineated within the Advanced Standards in Gifted Education Teacher Preparation (NAGC & CEC, 2013). Researchers in the field of gifted education have investigated the use and effectiveness of TPD for many decades (Dettmer, 1998; Little & Housand, 2011; Siegle, 2002; VanTassel-Baska, 1986). Historically, TPD has been conducted through face-to-face training, but, with the current growth of virtual learning environments, recent research examined issues within the new method of oTPD that includes comparison to face-to-face PD (Russell, Carey, Kleiman, & Venable, 2009), continued use of oTPD (Smith & Sivo, 2012), and oTPD effectiveness with rural teachers (Eriksson, Noonan & McCall, 2012a). Additionally, within the field of gifted education research, the use of specific pedagogical components for designing both TPD and oTPD has been supported: practice (Dettmer, 1998), attitude (Little & Housand, 2011), collaboration (Dettmer, 1986), content knowledge (Smith-Westberry & Job, 1986) and goal effectiveness (Little & Housand, 2011). This paper theoretically develops and examines the outcome of a pilot study that evaluates the PACKaGE Model of oTPD (the Model) which is based in these gifted education pedagogical components.

Dede, Ketelhut, Whitehouse, Breit, and McCloskey (2009) state that oTPD model effectiveness is often evidenced “based on participant surveys completed immediately after the PD experience rather than later, when a better sense of long range impact is attainable”

(pg. 9). To challenge the short-range focus on effectiveness, this preliminary research study used Kirkpatrick and Kirkpatrick's (2006) model of training evaluation. Their model suggests that trainee behaviors should be evaluated for satisfaction at the time the training is completed, as well as six months after to evaluate for transfer of knowledge, skills and attitude. Therefore, for this study, teachers who completed oTPD via the Model completed an Initial Reaction Level Survey that measured satisfaction, as well as a Six-Month-Later Behavior Level Survey that preliminarily evaluates the extent of their pedagogical change.

Teacher Professional Development (TPD)

While researchers agree that TPD is an important predictor of classroom success, little attention has been given to ensuring that TPD will create a lasting change within teacher behaviors. Guskey (2000) states that "notable improvements in education almost never take place in absence of professional development…it is an absolutely necessary ingredient in all educational improvement efforts" (pg. 4). Studies by Darling-Hammond and Berry (2006), Hill, Rowan and Ball, (2005) and Yoon, Garet, Birman, and Jacobson (2007) demonstrate that teachers can create significant impact on the academic achievement of students. However, Petty, Heafner, Farinde, and Plaisance (2015) state that "Whether referred to as professional development, staff development, teacher development or in-service education, the same dilemma presents itself in many schools – an inability to effectuate and sustain change in teachers' pedagogical practices" (pg. 377).

Teacher Change and Professional Development

Prior research suggests that quality PD offers lasting impact that includes a change in practice (Guskey, 1985). However, Claire and Adger (2000) state that one-shot workshops and pre-packaged seminars may only create awareness of topics while building discrete skills, but they do not facilitate teacher change. Also, Knapp (2003) suggests that TPD focuses more on improving student achievement than teacher learning. Darling-Hammond

and Richardson (2009) believe that PD should focus on teacher growth over time through practitioner knowledge and classroom practices. The Model was developed in response to these issues of teacher change, as well as the following gifted education PD recommendations.

Gifted Education Teacher Professional Development

Through the Advanced Standards in Gifted Education Teacher Preparation (NAGC & CEC, 2013), the National Association for Gifted Children (NAGC) & Council for Exceptional Children (CEC) cite the importance of PD in gifted education for gifted and regular education teachers to ensure that students are appropriately identified and served. Under the Curricular Content Knowledge section (2.2) of the Advanced Standards, the NAGC and CEC suggest that gifted education teachers should "continuously broaden and deepen professional knowledge and expand their expertise with…curriculum standards [and] effective teaching strategies" (2013, pg. 1). Also, under the Standards' Professional Practice section (6.4), the NAGC and CEC state that gifted education teachers should "actively participate in professional development…to increase professional knowledge and expertise" (2013, pg. 4). Additionally, Dede et al. (2009) suggest that while schools must increase teachers' capacity for improvement with PD, they also need to ensure that time, effort and limited resources are devoted to quality PD that teaches with and about best practices. For reasons including convenience, time savings, and availability, many schools turn to oTPD opportunities to build their gifted education teachers' knowledge and expertise (Siegle, 2002).

Online Teacher Professional Development (oTPD)

Similar to its face-to-face counterpart, oTPD has been examined and evaluated by education researchers. Dede (2004 as cited in de Kramer, Masters, O'Dwyer, Dash, & Russell, 2012) suggests that oTPD embraces the general benefits of online learning that

includes added time for deeper reflection and the elimination of traditional professional development's social and physical boundaries. Accordingly, Eriksson et al. (2012a) examined the oTPD of rural and non-rural special education teachers. After five 4-week online seminars, teachers (N=149) reported that they gained knowledge and developed increased capacity to apply and implement research-based practices within their classrooms. Teachers also indicated a creation of collaborative relationships within a wider community of learning that was not possible within their singular school or school district. Similarly, Little and Housand (2011) state that gifted education resource teachers can benefit from oTPD since these small groups of teachers are separated from one another by distance, but can make professional connections to each other in an online environment.

However, scholars have differing ideas concerning how oTPD for gifted education teachers should be designed. For example, Hull, Bull, Montgomery, May, and Overton (2000) suggest that all designs should include a collaborative learning community, asynchronous threaded discussions, and projects using authentic problem solving. Siegle (2002) suggests that oTPD should include a strong outline of the instructor's role, initial warm-up activities, and guidelines and evaluations for teachers' virtual participation. Finally, Eriksson, Weber and Kirsch (2012b) design their oTPD for gifted education teachers with the use of up-to-date articles, web-based resources instead of textbooks, differentiated learning and rubrics for self-assessment. While these design strategies have the potential to be useful, schools and organizations can find difficulty understanding the growing wealth of oTPD options to determine which models are most important and appropriate for quality oTPD.

Encouragingly, recent empirical research has found that no significant difference exists between online and face-to-face TPD in the context of curriculum implementation (Fisher, Schumaker, Culbertson, & Deshler, 2010; Fishman et al., 2013; Masters, de Kramer, O'Dwyer, Dash, & Russell, 2012; Powell, Diamond, Burchinal, & Koehler, 2010). However,

Giles and Hargeaves (2006) suggest that a lack of teacher buy-in and community support, participation attrition, standardization pressure, and changes in regulations regarding TPD are threats to the effective implementation and growth of oTPD. Notwithstanding these potential drawbacks, scholars continue to espouse the benefits of oTPD and its increasing value (Eriksson et al., 2012b; Little & Housand, 2011). Thus, new models of oTPD, such as the one developed in this paper, must be designed to promote teacher pedagogical change and examined for effectiveness.

The PACKaGE Model of oTPD for Gifted Education

To create the Model, the most relevant design features from gifted education's TPD literature were selected. For reasons described below in each pedagogical component's section, the Model was designed to focus on practice (P) (Dettmer, 1998), attitude (A) (Little & Housand, 2011), collaboration (C) (Dettmer, 1986), content knowledge (K) (Smith-Westberry & Job, 1986), and goal effectiveness (aGE) (Little & Housand, 2011). Additionally, to improve the robustness and comprehensiveness of the Model, it was theoretically based in learning theory. Other current online PD models, such as the Sharable Content Object Reference Model (ASCD, 2016) as well as Holmes, Signor and MacLeod's (2010) distance learning model, have not taken the additional step to connect with learning theory and are potentially less comprehensive.

The Model's conceptual framework is based in learning theory, specifically how people learn (HPL) (Harris, Bransford, & Brophy, 2002), to create an effective professional development model. HPL theory is comprised of four interdependent foci which create the learning environment. First, the learner-centeredness focus suggests that instruction should be tailored with the learners' prior knowledge, experience, misconception, and preconceptions of the topic in mind. Secondly, the knowledge-centeredness focus concentrates on the issues related to what learners need to know, along with how knowledge should be structured and

applied. Next, the assessment-centeredness focus suggests that frequent opportunities to monitor and share the learner's progress toward learning goals should be included. Finally, the community-centeredness focus recognizes that teachers are members of multiple communities including classrooms, departments, and the teaching profession. Therefore, the foci of HPL theory (Harris et al., 2002) encourage the creation of classroom opportunities for teachers to learn from and share with each other. The PACKaGE Model combines the four foci of HPL theory together to create a holistic model of oTPD. The following section outlines the specific pedagogical components of the Model.

Structure of the PACKaGE Model of oTPD

Practice (P)

Within the Model, the practice component is defined as "how you go about doing your job" (Beckett, 2006, pg. 1). To enhance the well-being of students identified as gifted and talented, Dettmer (1986) suggests that PD should encourage self-directedness as teachers share and build upon their own experiences. Dettmer (1998) also states that PD should be framed by activities that are specific to teachers' local school context. Additionally, Little and Housand (2011) advise that change occurs as a result of teachers 'trying something out' and observing the effects on their own students. Also, Eriksson et al. (2012b) state that gifted education TPD should include open-ended assignments that allow teachers to make direct connections to classroom applications. To encourage a change in teachers' practice, the Model uses knowledge-gap-filling assignments that require teachers to choose local context issues. Prior to the commencement of the oTPD, the Model includes an educational interest inventory which indicates teacher knowledge levels and knowledge gaps of the oTPD content to allow for program modification. Within the Model, the practice component originates in the knowledge-centeredness quadrant of HPL theory (Harris et al., 2002) since it examines how knowledge is structured for teachers and applied to their teaching context.

Attitude (A)

Within the Model, the attitude component is defined as the cognitive evaluation and behavior intention toward individuals and values (Chung et al., 2015). Dettmer (1998) suggests that PD for gifted education teachers must target novice, experienced, as well as veteran teachers who may hold different attitudes toward their teaching based on experience. Little and Housand (2011) agree by stating that PD must first "meet teachers where they are" (pg. 20). These authors believe that PD should support change in teachers' attitudes and recognize the various levels of readiness and openness that teachers have when they engage with PD. Furthermore, Little and Housand (2011) suggest that oTPD should encourage teachers to experiment with what they have learned so PD instructors can assuage concerns and answer questions about the teachers' classroom results. To encourage a change in teachers' attitude, the above research supports the incorporation of sharing and reflection among teachers. The Model strives to meet teachers where they are with respect to how and who they teach, as well as their pedagogical and curricular experiences. Within the Model, the attitude component has its roots in the learner-centeredness quadrant of HPL theory (Harris et al., 2002) since the theory focuses on learners' prior knowledge, experience, misconceptions, and preconceptions.

Collaboration (C)

Within the Model, the collaboration component is defined as the action of working with someone to produce something through dialogue, decision making, action taking, and evaluation (Woodland, Lee & Randall, 2013). Dettmer (1986) suggests that collaborative projects are appropriate for gifted education PD since teachers are "a rich resource for shared learning" (p. 133). In addition, Siegle (2002) and Hull et al. (2000) recommend that collaborative groups in oTPD should use problem-solving strategies since groups tend to facilitate the creation of appropriate solutions. Considering this research, the Model uses

online collaborative spaces for teachers to converse, make decisions, evaluate, and take action during weekly discussions and in the creation of a culminating product. Within the Model, the collaboration component originates within the community-centeredness quadrant of HPL theory (Harris et al., 2002) as it recognizes how teachers learn from each other within collaborative discussions and groups.

Content Knowledge (K)

Within the Model, the content knowledge component is defined as the knowledge of effective ways to support classroom student learning of specific content (Shulman, 1986). To match gifted and talented education content knowledge and activities to teacher needs, Smith-Westberry and Job (1986) suggest that preparation for TPD involves asking the question, "What are the needs of the audience on the continuum between awareness and mastery of a teaching skill?" (pg. 135). To offer specific change in local programs, VanTassel-Baska (1986) states that PD for gifted education teachers should identify actual TPD needs as well as the perceived needs of the school district. Accordingly, she recommends that TPD designers should use a combination of their own expertise of gifted educational needs along with the pressing desires of teachers and/or school districts. The Model uses gifted education's eminent researchers' outlines of curricular (VanTassel-Baska, 2008), psychological and social needs of gifted learners (Cross, 1997), as well as information gleaned from the educational interest inventory, mentioned above, to create oTPD curriculum. Within the Model, the content knowledge component is placed in the knowledge-centeredness quadrant of HPL theory (Harris et al., 2002) since it concerns the issues related to what learners need to know.

Goal Effectiveness (GE)

Within the Model, the goal effectiveness component is defined as the ability to put forth successful effort to gain a desired result or need (Deci & Ryan, 2000). Little and

Housand (2011) suggest that oTPD activities should be initially designed with the objective of meeting meaningful professional learning goal outcomes. Furthermore, when conducting TPD, Dettmer (1986) determines the needs of gifted education teachers by requesting goals from them to identify the type of PD assistance they require. The Model uses PD objectives and formative and summative assessment to align teacher needs to the specific oTPD topic. The Model also incorporates goals from state and national standards as guides toward creating appropriate oTPD objectives. Within the Model, the goal effectiveness component is based in the assessment- and knowledge-centeredness quadrants of HPL theory (Harris et al., 2002) since it includes opportunities to monitor and share teachers' progress, the knowledge gained, and how teachers can use this progress and knowledge toward their own learning goals.

Summary

This review outlined a model of oTPD for gifted education teachers designed from decades of literature to glean appropriate pedagogical and curricular elements. Since Guskey (1985) suggests that PD leads to classroom teacher change, schools and school districts must use empirical data to examine and choose appropriate models of oTPD. Accordingly, for this study, the PACKaGE Model of oTPD was created, implemented over five years, and two research questions were developed to examine the results:

> RQ1: Upon completion of an oTPD course, to what extent do teachers initially provide positive ratings of the effectiveness, adequacy and overall quality of the PACKaGE Model?
>
> RQ2: To what extent does the PACKaGE Model of oTPD create change in teacher pedagogical components, specifically practice, attitude, collaboration, content knowledge, and goal effectiveness six months after oTPD completion?

Methods

Evaluation of Professional Development Training

For this study, the evaluation of the Model's training outcome was described within Kirkpatrick and Kirkpatrick's (2006) training evaluation model. Four levels of evaluation exist within their model, and this study used two: the Reaction and Behavior Levels. The Reaction Level of training evaluation examined trainees' initial impression and level of effectiveness, adequacy and overall quality of the training. Kirkpatrick and Kirkpatrick (2006) suggest that, for any training to be successful, the trainees need to react favorably to it. Next, the Behavior Level of training evaluation examined trainees' institutional impact as a result of performance changes, six months after the training. Kirkpatrick and Kirkpatrick (2006) suggest that the Behavior Level of evaluation should "allow time for behavior change to take place" (p. 53). Therefore, data were collected from teachers at two points in time: immediately upon completion of the oTPD (Initial Reaction Level Survey) and six months after the training (Six-Month-Later Behavior Level Survey).

Participants

Initial Reaction Level Survey

The Initial Reaction Level Survey was sent to 486 elementary and secondary teachers that participated in one of six 14-week oTPD concerning gifted and talented education. The Survey was created by staff members within the organization. 231 teachers completed the Survey which resulted in a 49% response rate. The organization emailed the Survey link to all oTPD attendees. Demographics were unavailable for the Initial Reaction Level Survey since the Survey was collected anonymously by the organization.

Six-Month-Later Behavior Level Survey

The principal investigator (PI) administered the Six-Month-Later Behavior Level Survey to teachers who successfully completed at least one of six 14-week oTPD concerning gifted and talented education. Successful completion was defined as receiving a summative

assessment grade of 83% through 100%. Although an enrollment of 480 teachers successfully completed oTPD between 2010 and 2015, many of the emailed Survey requests were returned by the email system as undeliverable, leaving 171 deliverable teacher email addresses. 122 teachers completed the Survey providing a response rate of 71%. Participants were 91% Female, 92% Caucasian, 5% African American, 2% Hispanic and 1% Asian. Additionally, 49% of the participants had earned a master's degree (as highest degree earned) while 47% had earned a bachelor's degree before attending the oTPD. The average teacher age was 34 years, the average years of teaching was five and the average years of teaching one or more students identified as gifted and talented was less than one.

Instruments and Procedures

Initial Reaction Level Survey

The Initial Reaction Level Survey was a self-report measure created by the organization that consisted of five closed- and two open-ended questions measured on a Likert-type scale with 4-5 anchors. Teachers responded to questions concerning their initial reaction to the oTPD, such as its effectiveness, adequacy and overall quality. For example, teachers were asked to respond to items such as the effectiveness of teaching methods and strategies relative to the PD material by indicating 1=*Poor,* 2=*Acceptable,* 3=*Good,* 4=*Very good,* or 5=*Excellent*. The Survey was activated for ten days following the invitation and deactivated seven days before the oTPD concluded. Teachers were encouraged once to complete the voluntary evaluation through an organization email and once as an expectation within the oTPD program created by the instructor. Completion of the Survey was not required nor used as summative assessment by the organization toward teachers' oTPD cumulative grade.

Six-Month-Later Behavior Level Survey

The Six-Month-Later Behavior Level Survey was offered to teachers as an online, self-report survey of 17 closed- and open-ended questions. Teachers received two request-to-participate emails with an embedded survey link from the PI. The questions were designed by the PI specifically for the study based on the literature presented within the study's literature review. The Survey questions assessed teacher behavior change concerning the gifted education pedagogical components of the Model via a 5-anchor Likert-type scale. For example, teachers were asked to respond to questions such as 'To what extent did the oTPD create positive change in your practice?' by indicating 1=*Very slightly or not at all*, 2=*A little*, 3=*Moderately*, 4=*To a great extent*, or 5=*To a very great extent*.

To increase validity of this measure, two content experts with extensive backgrounds as teachers and administrators within gifted education settings were asked to evaluate the legitimacy of the questions. These content experts reviewed an initial set of the Six-Month-Later Behavior Level Survey questions and provided feedback to the PI. Survey questions were then modified with this specific feedback in mind and returned to the content experts for a second evaluation. This iterative process continued until both content experts and the PI were satisfied that the Survey questions were appropriate and valid for this study.

Data Analysis

Teacher responses to the Initial Reaction Level and Six-Month-Later Behavior Level Surveys were analysed to determine the Model's impact on initial training response and pedagogical change over time. Analyses of the quantitative data were conducted using descriptive statistics, frequency, and bivariate correlation functions in SPSS. Extracts from the qualitative data were used to compliment the quantitative findings.

Pilot Study Results

The Initial Reaction Level Survey measured teachers' initial responses to the oTPD's effectiveness, adequacy and overall quality. The frequencies, descriptives, and correlations

from the Initial Reaction Level Survey are presented in Tables 1 and 2. Next, the Six-Month-Later Behavior Level Survey measured the positive extent of self-reported change to teachers' practice, attitude, collaboration, content knowledge, and goal effectiveness six months after the completion of the oTPD. The frequencies, descriptives, and correlations of teacher responses to this Survey are presented in Tables 3-9.

Initial Reaction Level Survey

Research Question 1 asks 'Upon completion of an oTPD course, to what extent do teachers initially provide positive ratings of the effectiveness, adequacy and overall quality of the PACKaGE Model?' Table 1 presents frequency data from the Initial Reaction Level Survey responses.

Insert Table 1 about here

Table 1 suggests that teachers responded positively to the oTPD Model. Responses, from the following possible anchors, 1=*Poor*, 2=*Acceptable*, 3=*Good*, 4=*Very good*, or 5=*Excellent*, mostly fell within the highest percentage of anchors labelled *Excellent* or *Very good*. For example, Table 1 shows that 57.60% (N=133) of teachers indicated that the effectiveness of teaching methods and strategies relative to the PD was *Excellent*. Similarly, 50.20% (N=101) of the teachers responded *Excellent* to the amount they have learned as a result of the oTPD. Table 1 appears to be a good initial indication that the oTPD Model is effective, adequate and offers overall quality to an *Excellent* extent. Thus, Table 1 provides positive preliminary support for Research Question 1. Table 2 presents descriptive statistics and correlation matrix data from the Initial Reaction Level Survey responses.

Insert Table 2 about here

The means of the items presented in Table 2 are greater than 4, suggesting that participants found the training to be effective, adequate, and of overall high quality. Additionally, Table 2 demonstrates the expected positive relationships between the Initial Reaction Level Survey question responses. For example, item 1 concerns the usefulness of the training and item 2 concerns the amount the teacher has learned during the training: these are moderately and significantly correlated at a level of .64. These positive relationships are appropriate given that teachers were more likely to learn when the PD material presented was perceived by them as useful. However, the items are not so highly correlated so as to suggest that they are essentially measuring the same construct. The moderate levels of correlations suggest validity in the Survey questions. Further, the range of correlations suggests that there is no common response bias in the data. Overall, Table 2 provides further positive preliminary support for Research Question 1.

In addition to the quantitative data presented above, qualitative data were also collected from the Initial Reaction Level Survey. For example, Teacher 71 reacted to the oTPD by stating that it offered "appropriate and interesting material that inspires students to have interactions on BB [Blackboard] that makes the course very educational and informative. We speak from experience as well as from the information we get in the readings and podcasts" (Survey Response, August 1, 2010). Teacher 112 wrote: "The greatest strength was creating an incredible learning experience despite the class being an online course. I never expected to learn so much and be so excited about a course online" (Survey Response, November 1, 2014). Additionally, Teacher 98 wrote:

> All of the assignments were meaningful…I appreciated the fact that there were options and consequently I was able to choose the one that fit well with my strengths. This was an excellent course and not only did I learn a great deal, but it also gave me a new sense of excitement. (Survey Response, June 1, 2011)

Finally, Teacher 171 indicated "I felt it was very relevant to my career goals and appropriate for the level of the PD" (Survey Response, November 1, 2014). Taken together, these qualitative examples provide additional positive preliminary support for Research Question 1.

Six-Month-Later Behavior Level Survey Results

Research Question 2 asks: To what extent does the PACKaGE Model of oTPD create change in teacher pedagogical components, specifically practice, attitude, collaboration, content knowledge, and goal effectiveness six months after oTPD completion? The Six-Month-Later Behavior Level Survey was sent and collected six months after the conclusion of the oTPD. Each pedagogical component was analysed separately below. Preliminary results by pedagogical component are presented in Tables 3-9.

Table 3 shows teacher responses to three Six-Month-Later Behavior Level Survey questions related to practice. In all instances, teachers reported a positive change in their practice as a result of the Model. For example, from the following anchors, 1=*Very slightly or not at all*, 2=*A little*, 3=*Moderately*, 4=*To a great extent, or* 5=*To a very great extent*, 69.7% of teachers responded *To a great extent* or *To a very great extent* to the question "To what extent did the oTPD encourage you to try out something you learned and see the effects on your own students?" The mean responses to the questions in Table 3 are not as high as those seen in the Initial Reaction Level Survey above. The drop in mean response is expected as the questions examined behavior change which can take more effort and commitment on the part of the teacher than does evaluating training effectiveness (Kirkpatrick & Kirkpatrick, 2006). The standard deviations are higher than those seen in the Initial Reaction Level Survey. Again, this increase is not unexpected since teachers may or may not be willing or able to put forth the effort necessary to change their teaching behavior. Overall, Table 3 provides

preliminary support for Research Question 2 with regard to the pedagogical component of practice.

Additionally, qualitative data from teachers suggest that a positive change in their practice as a result of the Model is evident. For example, Teacher 102 wrote “I found the professional development on strategies for differentiation extremely effective” (Survey Response, November 1, 2014). Teacher 117 indicated “I give my students more opportunities to advance through differentiation” (Survey Response, November 1, 2014). Taken together, these findings provide positive preliminary support for Research Question 2 with regard to practice.

Table 4 shows teacher responses to the Six-Month-Later Behavior Level Survey question related to attitude. Teachers reported a positive change in their attitude as a result of the Model as 52.5% of teachers responded *To a great extent* or *To a very great extent* to the question “To what extent did the oTPD create positive change in your teaching attitude?” Thus, Table 4 provides positive support for Research Question 2. Additionally, qualitative data from teachers suggest a positive change in their attitude as a result of the Model. Teacher 102 added “I became able to see many small differences in teaching gifted students and many of the large issues concerning training teachers for gifted education” (Survey Response, November 1, 2015). Teacher 73 stated “It has made me more aware of how I view rigor and individualization” (Survey Response, June 1, 2014). Taken together, these findings provide positive preliminary support for Research Question 2 with regard to the pedagogical component of attitude.

Insert Tables 3 through 7 about here

Table 5 shows teacher responses to the Six-Month-Later Behavior Level Survey questions related to collaboration. Teachers reported a positive change in their collaboration as a result of the Model. For example, 56.5% of teachers responded *To a great extent* or *To a very great extent* to the question "To what extent have you conferred with colleagues concerning gifted issues since the completion of your oTPD?" Teachers provided less support for question 5 than they did for question 6. This finding is not unexpected since making connections across multiple schools is more difficult and time consuming than conferring with local colleagues. However, overall, Table 5 provides positive support for Research Question 2. Additionally, qualitative data from teachers suggest a positive change in their collaboration as a result of the Model. Teacher 111 wrote:

> I have had positive feedback from teachers on the information I have provided on nominating students for the gifted program. They have said things like 'I was unsure about nominating Paul, but after reading the characteristics you provided I think I should give him the opportunity to be identified.' (Survey Response, November 1, 2015)

Teacher 103 elaborated: "I have actually helped in identifying a teacher who may fill an open gifted position in our school next year. I based this on her present skills, student interaction, teaching methods and higher level thinking" (Survey Response, November 1, 2014). Taken together, these findings provide positive preliminary support for Research Question 2 with regard to the pedagogical component of collaboration.

Table 6 shows teacher responses to the Six-Month-Later Behavior Level Survey questions related to content knowledge. Teachers reported a positive change in their content knowledge as a result of the Model. For example, 74.6% of teachers responded *To a great extent* or *To a very great extent* to the question "To what extent did the oTPD create positive change in your gifted and talented content learning?" Thus, Table 6 provides positive support for Research Question 2. Additionally, qualitative data from teachers suggest a positive change in their content knowledge as a result of the Model. Teacher 51 commented:

"Reflection was the most effective means of learning through online education" (Survey Response, June 1, 2014). Teacher 95 said "I enjoyed trying new concepts and gauging the effectiveness of the new concepts on student learning and engagement" (Survey Response, November 1, 2015). Taken together, these findings provide positive preliminary support for Research Question 2 with regard to the pedagogical component of content knowledge.

Table 7 shows teacher responses to the Six-Month-Later Behavior Level Survey questions related to goal effectiveness. Teachers reported a positive change in their goal effectiveness as a result of the Model. For example, 63.1% of teachers responded *To a great extent* or *To a very great extent* to the question "To what extent did the oTPD create positive change in your professional goals?" Thus, Table 7 provides positive support for Research Question 2. Additionally, qualitative data from teachers suggest a positive change in their goal effectiveness as a result of the Model. Teacher 81 wrote "I'm now planning to receive my full endorsement in gifted education (this was my first course of four)" (Survey Response, June 1, 2014). Teacher 63 reflected "As a new gifted coordinator, I now have a better grasp on what I should be striving for in identifying gifted students and know how to communicate this to the staff" (Survey Response, November 1, 2014). Taken together, these findings provide positive preliminary support for Research Question 2 with regard to the pedagogical component of goal effectiveness.

Insert Table 8 about here

Table 8 presents the correlations of all eleven questions from the Six-Month-Later Behavior Level Survey. This table shows the relationships between the oTPD pedagogical components of practice, attitude, collaboration, content knowledge, and goal effectiveness. The items are all positively correlated at a low to moderate level (<.70). This low to moderate

correlation pattern suggests that the items are measuring unique aspects within oTPD and provides additional support for the validity of the Six-Month-Later Behavior Level Survey.

In contrast to the above preliminary results supporting Research Questions 1 and 2, the study also revealed specific gifted education pedagogical components that the Model did not show positive change. The most frequent low-anchor responses from the Six-Month-Later Behavior Level Survey are shown in Table 9 along with illustrative qualitative comments.

Insert Table 9 about here

Table 9 shows the highest percentage low-anchor frequencies from teacher responses to Six-Month-Later Behavior Level Survey questions. In all instances within Table 9, the greatest majority of participants reported *Very slightly or not at all* and *Moderately* changes as a result of the Model. For example, 48.9% of participants indicated that they have not attended gifted education workshops or conferences since the completion of their oTPD. Additionally, the illustrative qualitative data provided by teachers for these questions suggest that the school context, including time, budgets and priority toward specific student populations are barriers for these gifted education pedagogical components. It is interesting to note that the pedagogical components of content knowledge and goal effectiveness did not receive any high percentage low-anchor frequency responses. This lack of low-anchor frequencies suggests that less variance in behavior change is present within content knowledge and goal effectiveness than in practice, attitude and collaboration.

Discussion

This paper sought to theoretically develop and evaluate the PACKaGE Model of oTPD. The evaluation included initial teacher satisfaction of the training and the extent that the Model created positive pedagogical change in teachers' practice, attitude, collaboration,

content knowledge, and goal effectiveness six months after completion of the oTPD. The preliminary results of the initial survey provided evidence that the majority of teachers indicated *Excellent* to the Model's effectiveness, adequacy and overall quality. The preliminary results of the six-month-later survey provided evidence that teachers indicated positive change *To a great extent* in each of the five pedagogical components. Qualitative evidence demonstrated support for the quantitative results of both surveys. Additionally, the preliminary results provided evidence that some of the Model's pedagogical components contained less variance when compared to other components.

Theoretical Implications

Dede et al. (2009) suggest that quality oTPD is created when appropriate time, effort and resources are used by schools to teach teachers with and about best practices, but recent research has delineated school systems' potential inability to generate and perpetuate change in teachers' pedagogical practices (Guskey, 1985; Petty et al., 2015). Also, researchers state that TPD only creates awareness of topics (Claire and Adger, 2000) or focuses on student achievement (Knapp, 2003) rather than facilitating teacher change. The preliminary results of the study suggest that the PACKaGE Model begins to address the need to create significant behavior change across all five pedagogical components of the Model.

Prior research on designing appropriate oTPD for gifted education teachers provides a wide-ranging set of suggestions. Siegle's (2002) work focuses on guidelines for oTPD, while Hull et al. (2000) describe the importance of collaboration within oTPD. Additionally, Eriksson et al. (2012b) suggest that the focus should be on the appropriateness of the oTPD's resources. The pedagogical components within the PACKaGE Model of oTPD are inclusive of the above and additional suggestions from the field of gifted education. Therefore, the design of the Model offers schools and organizations a simpler and more comprehensive model of oTPD than has previously been available.

Finally, most online PD models, such as Holmes, Signor and MacLeod's (2010) distance learning model and the Sharable Content Object Reference Model (ASCD, 2016), have not incorporated learning theory in their design and delivery. As conceptual frameworks, learning theories are important since they describe how material could be understood, developed, and remembered by the learner. For example, learning theories include influences, such as experience and emotion, to examine how an individual's understanding is changed. The PACKaGE model improves upon prior models of TPD by utilizing learning theory (Harris et al., 2002) as a theoretical foundation.

Practical Implications

For teachers, principals and gifted coordinators, this research creates a model of oTPD whose foundation lies in both prior theoretical advances as well as in research-based best practices taken from the field of gifted and talented education. Thus, practitioners who implement this Model can feel certain that they are using a broadly-based and highly comprehensive model of oTPD. Additionally, the PACKaGE Model pares down the possible components of gifted education oTPD into a manageable set of five familiar concepts, such as goals and practice. Practically, the Model is comprised of real-world ideas that teachers have encountered in previous training.

Areas of Further Research

Since there appears to be a relatively strong relationship between oTPD and pedagogical growth in teachers via the Model, further research should examine the ability, growth and achievement of students taught by Model-trained teachers. Student responses to Model-trained teachers may interact with teacher behavior change resulting from the Model, thereby decreasing or increasing the effects of each pedagogical component. Thus, observations of Model-trained teachers and students simultaneously by expert teachers may reveal different impact of each of the five pedagogical components than was found within

this preliminary study. Alternately, interviewing parents about their observation of their child's education from Model-trained teachers could also become fruitful.

Additionally, preliminary findings from the Six-Month-Later Behavior Level Survey suggest that even though teachers reported that a pedagogical change occurred *To a great extent* in their overall teaching pedagogy, the majority responded *Very slightly or not at all* to participating in additional gifted education TPD. Even though the activity of collaboration within TPD has been promoted by many researchers (Dettmer, 1986; Hull et al., 2000; Little & Housand, 2011; Siegle, 2002), teachers in this study reported the lowest extent of pedagogical change when reflecting on this component.

Another potential area for further study might include analysis of specific pedagogical components of the Model to determine if some have greater or reduced importance toward positive pedagogical change. Such findings could be important in allowing instructors of oTPD/TPD to focus on specific components of teacher pedagogy to maximize teacher growth.

Finally, time could be spent on creating a professional support or learning community that solidifies and expands teachers' expertise in addressing gifted learning needs. Follow-on activities, whether in a virtual learning environment or in face-to-face settings, can offer Model-taught teachers further engagement by allowing them to share and reflect on best teaching practices.

Study Limitations

The present study was limited demographically. While the total sample size for the Six-Month-Later Behavior Level Survey included 122 teachers, most were female, White and had earned a master's degree before the oTPD. Furthermore, the majority of the study's participants reported that they had less than one year of teaching gifted students and about five years overall teaching experience. Additionally, one could argue that the study's teacher

participants, mostly from the state of Virginia, had the impetus and ability to seek out and/or pay for their own oTPD. To further validate the preliminary findings, the study should be replicated with diverse populations of teachers of identified gifted and talented students and offered as free or low-cost oTPD.

An additional limitation of the study is the use of the organization's Initial Reaction Level Survey. In order to collect data during the oTPD, the organization required the use of their instrument, which was internally developed and validated. The inclusion of a PI-created Initial Reaction Level Survey could allow for additional data collection including demographics and offer additional data connections and examinations of change for teachers who complete both measures. The use of a PI-created Initial Reaction Level Survey would also all for reporting of reliability and validity information.

A final limitation is that the study's data are self-reported. While surveying teachers provides the most proximal reactions to the PACKaGE model, other sources of data could provide triangulation of the results and additional perspectives. As suggested above in the areas of further research section, the preliminary results presented here could be strengthened by assessing student outcomes, observing teachers, and interviewing parents regarding the Model.

Conclusion

Research in regular and gifted education fields has produced significant work that articulates what appropriate TPD/oTPD models should include. However, there is little evidence to guide school systems toward empirically-supported models of oTPD dedicated to teacher behavior change within gifted education. This research developed and provided a preliminary empirical test of the PACKaGE Model, a theoretically-based comprehensive model of gifted education oTPD. Overall, the preliminary findings suggest that the use of the oTPD Model can create positive change within teachers' gifted education pedagogy.

References

ASCD (2016, January 01). *Learning management system (LMS) features*. Retrieved April 30, 2016, from http://www.ascd.org/professional-development/pdonline/lms-features.aspx

Beckett, C. (2006). *Essential theory for social work practice.* London: Sage Publications.

Chung, W., Chung, S., Edgar-Smith, S., Palmer, R. B., DeLambo, D., & Huang, W. (2015). An examination of in-service teacher attitudes toward students with autism spectrum disorder: Implications for professional practice. *Current Issues in Education, 18*(2). Retrieved from http://cie.asu.edu/ojs/index.php/cieatasu/article/view/1386

Claire, N., & Adger, C. T. (2000). Sustainable strategies for professional development in education reform. In K. Johnson (Ed.), *Case studies in practice series: Teacher education volume*. Alexandria, VA: Teachers of English to Speakers of Other Languages.

Cross, T.L. (1997). Psychological and social aspects of educating gifted students. *Peabody Journal of Education, 72*(3/4), 180-200.

de Kramer, R. M., Masters, J., O'Dwyer, L. M., Dash, S., & Russell, M. (2012). Relationship of online teacher professional development to seventh- grade teachers' and students' knowledge and practices in English language arts. *The Teacher Educator, 47*(3), 236-259.

Darling-Hammond, L., & Berry, B. (2006). Highly qualified teachers for all. *Educational Leadership, 64*(3), 14–20.

Darling-Hammond, L., & Richardson, N. (2009, February). Teacher learning: What matters? *Educational Leadership, 66*(5), 46-53.

Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry, 11*(4), 227-268.

Dede, C., Ketelhut, D. J., Whitehouse, P., Breit, L., & McCloskey, E. M. (2009). A research agenda for online teacher professional development. *Journal of Teacher Education, 60*(1), 8–19. doi: 10.1177/0022487108327554

Dettmer, P. (1986). Characteristics and needs of adult learners in gifted program in-service and staff development. *Gifted Child Quarterly, (30)*3, 131-134.

Dettmer, P. (1998). Positive ripple effects of professional development for gifted programs. *Tempo, 18*(2), 1, 4-6, 23-24.

Eriksson, A. S. G., Noonan, P. M., & McCall, Z. (2012a). Effectiveness of online professional development for rural special educators. *Rural Special Education Quarterly, 31*(1), 22-32.

Eriksson, A. S. G., Weber, C., & Kirsch, L. (2012b). A comprehensive plan for differentiating the training of teachers of the gifted online at the state, district and university levels in Florida, USA. *Gifted Education International, 28*(1), 41-57.

Fisher, J. B., Schumaker, J. B., Culbertson, J., & Deshler, D. D. (2010). Effects of a computerized professional development program on teacher and student outcomes. *Journal of teacher Education, 61*(4), 302-312.

Fishman, B. J., Konstantopoulos, S., Kubitskey, B. W., Vath, R., Park, G., Johnson, H., & Edelson, D. C. (2013). Comparing the impact of online and face-to-face professional development in the context of curriculum implementation. *Journal of Teacher Education, 64*(5), 426-438.

Giles, C., & Hargeaves, A. (2006). The sustainability of innovative schools as learning organizations and professional learning communities during standardized reform. *Educational Administration Quarterly, 42*(1), 124-156.

Guskey, T. R. (1985). Staff development and teacher change. *Educational Leadership, 42*(7), 57-60.

Guskey, T. R. (2000). *Evaluating professional development*. Thousand Oaks, CA: Corwin Press Inc.

Harris, T. R., Bransford, J. D., & Brophy, S. P. (2002). Roles for learning sciences and learning technologies in biomedical engineering education: A review of recent advances. *Annual Review of Biomedical Engineering*, 4, 29–48. doi:10.1146/ annurev.bioeng.4.091701.125502

Hill, H. C., Rowan, B., & Ball, D. L. (2005). Effects of teachers' mathematical knowledge for teaching on student achievement. *American Educational Research Journal*, *42*(2), 371-406. doi: 10.3102/ 00028312042002371

Holmes, A., Signor, B., & MacLeod, A. (2010). Professional development at a distance: A mixed-method study exploring inservice teachers' views on presence online. *Journal of Digital Learning in Teacher Education, 27*(2), 76-85.

Hull, D. F., Bull, K. S., Montgomery, D., May, J. R., & Overton, R. (2000). *Designing an online, introductory gifted education.* In Capitalizing on Leadership in Rural Special Education: Making a Difference for Children and Families. Conference Proceedings. Alexandria, VA. ERIC Document Reproduction Service No. ED439873

Kirkpatrick, D. L., & Kirkpatrick, J. D. (2006). *Evaluating training programs: The four Levels (3rd ed.).* San Francisco, CA: Berrett-Koehler Publishers.

Knapp, M. S. (2003). Professional development as a policy pathway. *Review of Research in Education*, *27*(1), 109-157.

Little, C. A., & Housand, B. C. (2011). Avenues to professional learning online: Technology tips and tools for professional development in gifted education. *Gifted Child Today, 34*(4), 18-27.

Masters, J., de Kramer, R. M., O'Dwyer, L. M., Dash, S., & Russell, M. (2012). The effects of online teacher professional development on fourth grade students' knowledge and

practices in English language arts. *Journal of Technology and Teacher Education, 20*(1), 21-46.

NAGC (National Association for Gifted Children) & CEC (Council for Exceptional Children) (2013). *Advanced standards in gifted education teacher preparation.* Retrieved from http://www.nagc.org/sites/default/files/standards/Advanced%20Standards%20in%20GT%20%282013%29.pdf

Petty, T. M., Heafner, T. L., Farinde, A., & Plaisance, M. (2015). Windows into teaching and learning: professional growth of classroom teachers in an online environment. *Technology, Pedagogy and Education, 24*(3), 375-388.

Powell, D., Diamond, K., Burchinal, M., & Koehler, M. (2010). Effects of an early literacy professional development intervention on Head Start teachers and children. *Journal of Educational Psychology, 102*(2), 299–312.

Russell, M., Carey, R., Kleiman, G., & Venable, J. D. (2009). Face-to-Face and online professional development for mathematics teachers: A comparative study. *Journal of Asynchronous Learning Networks, 13*(2), 71-87.

Ryan, K. J. (1979). *The Belmont report: Ethical principles and guidelines for the protection of human subjects of research*. Retrieved from http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher 15*(2), 4-14.

Siegle, D. (2002). Learning online: A new educational opportunity for teachers and parents. *Gifted Child Today, 25*(4), 30-33.

Smith-Westberry, J., & Job, R. L. (1986). How to be a prophet in your own land: Providing gifted program in-service for the local district. *Gifted Child Quarterly, 30*(3), 135-137. doi: 10.1177/001698628603000309

Smith, J. A., & Sivo, S. A. (2012). Predicting continued use of online teacher professional development and the influence of social presence and sociability. *British Journal of Educational Technology, 43*(6), 871–882. doi:10.1111/j.1467-8535.2011.01223.x

VanTassel-Baska, J. (1986). Lessons from the history of teacher in-service in Illinois: Effective staff development in the education of the gifted. *Gifted Child Quarterly, (30)*3, 124-126.

VanTassel-Baska, J. (2008). What works in curriculum for gifted learners: the evidence base. Retrieved from http://hkage.org.hk/en/events/080714%20APCG/01-%20Keynotes%20&%20Invited%20Addresses/1.9%20Van%20Tassel-Baska_What%20Works%20in%20Curriculum%20for%20the%20Gifted.pdf

Woodland, R., Lee, M. K., & Randall, J. (2013). A validation study of the Teacher Collaboration Assessment Survey. *Educational Research and Evaluation: An International Journal on Theory and Practice, (19)*5, 442-460.

Yoon, K. S., Garet, M., Birman, B., & Jacobson, R. (2007). *Examining the effects of mathematics and science professional development on teachers' instructional practice: Using professional development activity log.* Washington, DC: Council of Chief State School Officers.

Table 1

Initial Reaction Level Survey Frequency Data of Closed-ended Items

Items with 4 Anchors	Very good	Excellent	Total	N
1. The usefulness of the assigned text and other PD materials to learning	19.90%	60.60%	80.50%	230
2. The amount you have learned as a result of the PD	16.00%	50.20%	66.20%	202
Items with 5 Anchors	Very good	Excellent	Total	N
3. The adequacy of exams and other graded materials in testing the PD content	13.90%	70.60%	84.50%	231
4. The overall quality of the PD	15.20%	62.30%	77.50%	231
5. The effectiveness of teaching methods and strategies relative to the PD material	16.50%	57.60%	74.10%	226

Table 2

Initial Reaction Level Survey Correlation Matrix

	Mean	SD	1	2	3	4	N
1. The usefulness of the assigned text and other PD materials to learning	4.39	.853	--				230
2. The amount you have learned as a result of the PD	4.39	.885	.640*	--			202
3. The adequacy of exams and other graded materials in testing the PD content	4.52	.823	.454**	.512**	--		231
4. The overall quality of the PD	4.38	.885	.608**	.739**	.635**	--	231
5. The effectiveness of teaching methods and strategies relative to the PD material	4.28	.989	.513**	.630**	.703**	.706**	226

**p<.05; **p<.01*

Table 3

Six-Month-Later Behavior Level Survey Questions Related to Practice

Practice	To a great extent	To a very great extent	Total	Mean	SD	N
1. To what extent did the oTPD create positive change in your practice?	47.50%	11.50%	59.00%	3.58	.889	122
2. To what extent have you participated in developing specific lessons for students identified as gifted and talented since the completion of your oTPD?	35.20%	27.00%	62.20%	3.48	1.392	122
3. To what extent did the oTPD encourage you to try out something you learned and see the effects on your own students?	41.80%	27.90%	69.70%	3.84	1.004	122

N=122

Table 4

Six-Month-Later Behavior Level Survey Question Related to Attitude

Attitude	To a great extent	To a very great extent	Total	Mean	SD
4. To what extent did the oTPD create positive change in your teaching attitude?	41.80%	10.70%	52.50%	3.42	1.01

N=122

Table 5

Six-Month-Later Behavior Level Survey Questions Related to Collaboration

Collaboration	To a great extent	To a very great extent	Total	Mean	SD
5. To what extent did the oTPD connect you to gifted education professionals across multiple schools and districts?	30.30%	5.70%	36.00%	2.76	1.28
6. To what extent have you conferred with colleagues concerning gifted issues since the completion of your oTPD?	35.20%	21.30%	56.50%	3.55	1.12

N=122

Table 6

Six-Month-Later Behavior Level Survey Questions Related to Content Knowledge

Content Knowledge	To a great extent	To a very great extent	Total	Mean	SD
7. To what extent did the oTPD create positive change in your gifted and talented content learning?	50.80%	23.80%	74.60%	3.93	.810
8. To what extent did the oTPD create positive change in your pedagogical knowledge?	41.00%	17.20%	58.20%	3.66	.899
9. To what extent did the oTPD encourage you to increase your 'think time' or time taken for reflective thought before responding to a Blackboard prompt?	43.00%	23.70%	66.70%	3.78	1.041

N=122

Table 7

Six-Month-Later Behavior Level Survey Questions Related to Goal Effectiveness

Goal Effectiveness	To a great extent	To a very great extent	Total	Mean	SD
10. To what extent did the oTPD create positive change in your professional goals?	45.10%	18.00%	63.10%	3.63	1.038
11. To what extent did the oTPD offer an alignment between your students' learning needs and your teaching needs?	36.80%	13.20%	50.00%	3.46	.997

N=122

Table 8

Six-Month-Later Behavior Level Survey Correlation Matrix

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. To what extent did the oTPD create positive change in your practice?	3.58	.889	--										
2. To what extent have you participated in developing specific lessons for students identified as gifted and talented since the completion of your oTPD?	3.48	1.39	.292**	--									
3. To what extent did the oTPD encourage you to try out something you learned and see the effects on your own students?	3.84	1.00	.463**	.397**	--								
4. To what extent did the oTPD create positive change in your teaching attitude?	3.42	1.02	.495**	.148	.436**	--							
5. To what extent did the oTPD connect you to gifted education professionals across multiple schools and districts?	2.76	1.29	.230*	.176	.349**	.102	--						
6. To what extent have you conferred with colleagues concerning gifted issues since the completion of your oTPD?	3.55	1.13	.255**	.661**	.441**	.194*	.284**	--					
7. To what extent did the oTPD create positive change in your gifted and talented content learning?	3.93	.810	.604**	.072	.526**	.574**	.144	.247**	--				

8. To what extent did the oTPD create positive change in your pedagogical knowledge?	3.66	.889	.528**	.176	.477**	.562**	.145	.264**	.542**	--			
9. To what extent did the oTPD encourage you to increase your 'think time' or time taken for reflective thought before responding to a Blackboard prompt?	3.78	1.04	.248**	.183*	.457**	.298**	.461**	.245**	.286**	.319**	--		
10. To what extent did the oTPD create positive change in your professional goals?	3.63	1.04	.512**	.216*	.507**	.647**	.163	.280**	.501**	.542**	.383**	--	
11. To what extent did the oTPD offer an alignment between your students' learning needs and your teaching needs?	3.46	.997	.423**	.446**	.699**	.411**	.350**	.442**	.457**	.422**	.409**	.420**	--

*N=122; *p<.05; **p<.01*

Table 9

Six-Month-Later Behavior Level Survey Questions with the Highest Percentage Frequency of Low Anchor Responses

Pedagogy Component	Behavior Level Survey Questions	Highest percentage low-anchor frequency	Highest percent
Attitude	To what extent have you attended gifted workshops/conferences since the completion of your oTPD? Supportive Qualitative Response from Teacher 81: "Budget cuts limit my participation in workshops and conferences unless I'm a presenter. At this point, I don't feel comfortable presenting on gifted ed topics. Through my coursework, I've learned that I have so much more to learn about educating this special group" (Survey Response, November 1, 2014).	Very slightly or not at all	43.90
Practice	To what extent have you participated in additional gifted education PD since the completion of your oTPD? Supportive Qualitative Response from Teacher 121: "None is available" (Survey Response, April 1, 2014).	Very slightly or not at all	33.30
Collaboration	To what extent have you mentored teachers or administrators for some aspect of gifted education since the completion of your oTPD? Supportive Qualitative Response from Teacher 77: "There is quite a bit of resistance to differentiating for gifted students. I understand this; our district's push is for bringing under-performing students up, rather than helping students exceed standards" (Survey Response, November 1, 2014).	Very slightly or not at all	33.30
Attitude	To what extent have you read gifted education journal articles or books since the completion of your oTPD? Supportive Qualitative Response from Teacher 43: "I want to read much more, but my school schedule does not allow me much time right now" (Survey Response, November 1, 2014).	Moderately	37.70
Collaboration	To what extent have you encouraged your colleagues to participate in gifted education PD since the completion of your oTPD?	Moderately	30.70

	Supportive Qualitative Response from Teacher 81: "We teachers are overworked. Although I'd love to push for everyone in my building to attend some gifted professional development, the reality is that they need to attend language acquisition training, content area training, best practice training, math training and so on" (Survey Response, June 1, 2014).		

N=122